

WHAT IS CLAIMED IS:

1. A method of delivering a therapeutic composition to a target site comprising:
delivering the therapeutic composition comprising genetic material through a catheter to the target site; and
delivering ultrasound energy to the target site,
wherein the catheter has an elongated catheter body with at least one axial lumen for delivery of genetic material therethrough, the catheter comprising at least one ultrasound transducer coupled to an energy source, wherein the at least one ultrasound transducer generates a sufficient level of ultrasound energy.
2. The method of claim 1, wherein the therapeutic composition further comprises a light activated compound.
3. The method of claim 1, wherein the genetic material is selected from the group consisting of DNA, RNA and analogs thereof.
4. The method of claim 1, wherein the genetic material is synthetic.
5. The method of claim 1, wherein the genetic material is recombinant.
6. The method of claim 1, wherein the therapeutic composition further comprises a microbubble.
7. The method of claim 2, wherein the therapeutic composition further comprises a microbubble.
8. The method of claim 1, wherein the genetic material comprises an oligonucleotide.
9. The method of claim 8, wherein the oligonucleotide has an affinity for a DNA in the target site.
10. The method of claim 9, wherein the DNA is a viral DNA.
11. The method of claim 9, wherein the DNA is an oncogene DNA.
12. The method of claim 9, wherein the oligonucleotide is an antisense oligonucleotide.
13. The method of claim 2, wherein the light activated drug is covalently bound to the genetic material.

14. A therapeutic composition comprising a light activated drug in combination with a nucleic acid.

15. The method of claim 1, wherein the at least one ultrasound assembly is positioned about a circumference of the elongated catheter body, the at least one support member supporting the at least one ultrasound transducer so as to define a chamber between the at least one transducer and the outer circumference of the elongated catheter body.

16. The method of claim 15, wherein the chamber is filled with a media that absorbs ultrasound energy such that a transmission of ultrasound energy from the ultrasound transducer to the elongated catheter body is reduced.

17. The method of claim 16, wherein the media is a gas selected from the group consisting of helium, argon, air and nitrogen.

18. The method of claim 16, wherein the media is a solid media selected from the group consisting of silicon and rubber.

19. The method of claim 15, wherein the chamber is evacuated using a negative pressure.

20. The method of claim 1, wherein the catheter further comprises:
a balloon positioned about the circumference of the elongated catheter body;
at least one media delivery port in fluid communication with the at least one axial lumen for delivery of an expansion media to expand the balloon; and
at least one media delivery port in fluid communication with the at least one axial lumen for delivery of a medicament.

21. The method of claim 20, wherein the balloon is positioned about the ultrasound assembly.

22. The method of claim 20, wherein the balloon is positioned about the circumference of the elongated catheter body adjacent to the ultrasound assembly.

23. The method of claim 1, wherein the ultrasound transducer is configured to deliver ultrasound energy of approximately 0.3 W/cm^2 at a frequency of approximately 1.3 MHz.

24. The method of claim 20, wherein pressure is used to drive the media across the balloon.

25. The method of claim 6, wherein the microbubble comprises a lipid substrate.
26. The method of claim 25, wherein the lipid substrate comprises a liposome.
27. The method of claim 6, wherein the interior of the microbubble includes a gas.